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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,487	03/23/2004	Deborah D.L. Chung	19226/2331 (R-5839)	3059

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12/28/2005

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EXAMINER

LAM, CATHY FONG FONG

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/807,487	<b>Applicant(s)</b> CHUNG, DEBORAH D.L.	
	<b>Examiner</b> Cathy Lam	<b>Art Unit</b> 1775	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 and 25-124 is/are pending in the application.
- 4a) Of the above claim(s) 1-21 and 25-110 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22, 111-113 and 124 is/are rejected.
- 7) ☒ Claim(s) 114-119 & 120-123 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>08-26-2005</u> . | 6) <input type="checkbox"/> Other: _____  |

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In view of the amendment and remarks filed on October 13<sup>th</sup> 2005, claims 1-22 and 25-124 are pending in the application. Claims 1-21 and 25-110 are withdrawn from consideration.

***Election/Restrictions***

1. Applicant's election of group II (i.e. claims 22 and dependents) in the reply filed on October 13, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. This application contains claims 1-22 and 25-124 are drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Claim Rejections - 35 USC § 112***

3. Claim 113 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "thermoplastic resin" is an improper Markush language. Applicant is required to clarify what specifically the thermoplastic resin is referring to.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claim 22 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Iruvanti et al (US 5098609).

Iruvanti discloses a heat conductive paste that is used between an electronic component (or a heat source) and a heat sink.

The heat conductive paste is a mixture of a powder and a liquid. The volume % of solid in the paste is from about 60-78 vol% (col 2 L 27-31). The solid powder can be diamond (col 2 L 44).

The examiner is taking the position that 60-78 vol % powder meets the limitation of the porous agglomerates of carbon black particles dispersed in a vehicle.

6. Claim 22 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Misra (US 6165612).

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Misra discloses an interface layer used for thermal dissipation between a heat source and a heat sink.

The interface layer is comprised of a polymeric material and a heat conductive filler (col 4 L 45-47 & L 56-60). The heat conductive filler can be graphite or diamond (col 5 L 6-7).

The examiner is taking the position Misra's graphite or diamond fillers formed the porous agglomerates dispersed in a paste forming vehicle.

7. Claim 22 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fick (US 4842911).

Fick discloses an interface material that is used for heat dissipation between a heat sink and an electronic device (col 2 L 40-43).

The interface material is comprised of an uncured silicone material and a finely divided heat conducting particles. The heat conducting particles can be graphite particles (col 5 L 52-55 & L 58-60).

The examiner takes the position that the finely divided heat conducting particles formed the porous agglomerates dispersed in a paste forming vehicle.

8. Claim 22 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Chen et al (US 6947285).

Chen teaches a thermal interface material which is placed between a heat source and a heat sink (col 1 L 29-31).

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The thermal interface material is comprised of thermal conductive fillers dispersed in a polymeric material. The thermal conductive fillers comprised of carbon nanocapsules which can be hollow spheres (col 2 L 30-35).

***Claim Rejections - 35 USC § 103***

9. Claims 111-113 and 124 rejected under 35 U.S.C. 103(a) as being unpatentable over Iruvanti et al (US 5098609) or Misra (US 6165612) or Fick (US 4842911) or Chen et al (US 6947285).

All of the prior art teach a heat conductive interface comprised of graphite, diamond or carbon fillers dispersed in a polymeric material.

The polymeric material can be a hydrocarbon (i.e. mineral oil, silicone oil, etc.), a thermoplastic or a thermosetting resin, an elastomeric material, etc. all these materials are disclosed in the cited prior art.

In view of the prior art teachings, one skill in the art would choose a suitable paste forming vehicle which gives optimum result when combined with carbon particles because such vehicles can easily be obtained through routine experimentations.

***Allowable Subject Matter***

10. Claims 114 and 120 and their dependents are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

11. Applicant's arguments filed on October 13, 2005 have been fully considered but they are not persuasive. Applicant traverses the art rejections and raises the following issue:

A. The diamond particles in Iruvanti are not porous agglomerates of carbon black and diamond particles are "highly thermally conducting", whereas the carbon black of the present invention is "relatively low thermal conductivity".

In respond to the above issue:

A. Absent a showing of unexpected results with the specific carbon black particles, it would have been obvious to one ordinary skill in the art to use either any of the graphite or diamond of different carbon species with a reasonable expectation of success in producing a heat conductive material.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
December 23, 2005